

## Research Article

### Body mass index and its relationship with socio-economic variables in Schoolgirls

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## Abstract

**Background:** Evaluation of anthropometric and body mass index is not only widely used to assess children's development, but also is simplicity, affordability and reliability and most powerful tool to study the growth and development of children in different societies. BMI is one of the most important indicators of the growth, especially in childhood, which can be influenced by some socio - economic variables. The present study aimed to investigate the relationship between body mass index with some of the socio - economic conditions in children with a primary and secondary education to physical development factors and social - economic conditions affecting the BMI.

**Methods:** This was a cross-sectional study and 200 children between 7 to 17 years of primary and secondary schools were selected and divided into two groups. Tools used in this study were questionnaires, Balance and Tape measure. Data were analyzed by SPSS 20 software. P<0.05 considered statistically significant.

**Results:** Majority of the samples was in normal and thin range. High school student girls had a lower average body mass index, and percentage of weight loss was greater among them.

**Conclusion:** Socio-economic variables affect the lifestyle of families and they can be associated with BMI.

**Keywords:** Body mass index, female students, parents socio-economic variables.

## Introduction

Underweight, overweight, higher than the standard weight or much body fat are nutritional and public health problems [1]. One of the goals of the World Health Organization is to enhance people's lifestyle [2]. Increasing prevalence of obesity and overweight in children is one of the worrying problems in recent decades. Adverse effects of malnutrition and weight loss in people are weakened immune system and recurrent infections, prematurity growth, short stature and delayed puberty and to prevent this problem, determining the prevalence of obesity, overweight and weight loss raises among health managers to be able to identify and do preventive interventions and treatment to reduce or entirely eliminated symptoms. In this regard, the BMI (Body Mass Index) is the most important and most commonly used screening tool. It is the most probable links between height with the total body fat, calculated it easy, fast and inexpensive, and closely associated with death risk [3].

In the study of 7 to 10 years old student girls in Tehran, 28.9% had weight loss that was 1.7 % severe, 4% moderate and 25.4% mild [4]. In another study in Malayer on the prevalence of obesity and weight loss among 1646 7 years children 48 children were obese, 923 natural and 675 were slim [5]. The most important causes of obesity were overeating, decreased

activity and psychological factors [6]. The best age to prevent children from becoming obese were elementary and middle school ages, from 6 to 15 years old that this age range is one of the most important groups influencing people and pushing them toward healthy behaviors to change lifestyle and behavior modification to promote a proper way of life [7].

Among the important factors affecting childhood obesity, children's entertainment pattern like watching TV, surfing the Internet and playing computer instead of physical activity has been reported by various studies [8, 9]. Nutrition experts have predicted that by 2020 the number of people obese worldwide across two billion people [10]. Several studies have been performed world widely to determine the status of obesity. The prevalence of obesity in a study by Suñé in southern Brazil was 5.3% and Sumarni reported prevalence of obesity in schoolchildren 2.7%, respectively. [11, 12]. All other studies done in this area imply that obesity is the most important problems of malnutrition in developed countries [13]. In our country, parsaii and colleagues in a study conducted in Sari on 240 girls aged 14-18 years , prevalence of underweight and obesity was 7.3 and 2.8% [13]. However, in some reports, the prevalence of underweight in student population has seen in 30% [14]. Today, in countries such as Iran that transition from traditional to modern way, lifestyle diseases related such as lung cancer, type 2 diabetes, high blood pressure, overweight and obesity is increasing [15].

The results of studies conducted in our country are very diverse, which can be caused by nutritional status, economy, and cultural moods. With regarding the role of obesity and underweight in health and quality of life, carrying out comprehensive research in order to identify the prevalence of the problem and the factors influencing them is essential and indisputable. The aim of this study was to determine the prevalence of obesity based on body mass index and weight loss in Torbat Students and identifying factors associated with it.

## Methods

This was a cross-sectional study that population consisted of all female students in elementary, middle and high schools of Torbat Heydariyeh city. This study confirmed by ethical committee of Torbat Heydariyeh university. Weight measurement with minimal clothing and height by non-elastic tape measure and in standing condition and without shoes. The data entered and analyzed using SPSS version 20. Simple t-test, chi-square, ANOVA and Tukey follow-up tests was used.  $p < 0.05$  was considered statistically significant.

## Results

Totally 200 students participated in this study that 100 people was primary schools and 100 was high schools and all of them were female and their average age was  $12.9 \pm 2.2$  years. The minimum and maximum age was 9 and 17 years. Average household income was  $400 \pm 231$  dollars and maximum and minimum amount was 1428 and 85 dollars. In response to this question that "Do you eat breakfast, 92% of students said they regularly ate breakfast and 8% did not consume.

About frequency of fast food consumption per week, 50% of students announced that did not eat this type of foods and only 5% of them used more than 4 times a week. Average pocket money of the students was 4.5 dollar and minimum and maximum was 0.15 and 14 dollars. Most students were first child (3%) and only two people were sixth child of their family and 70% of students were first or second child family.

Average TV watching hours of elementary and high school students was 1.6 and 1.8 hours. As expected, average TV watching hours was higher in younger than older students. Also Average hours of working with computer were 1.58 hours in between elementary students and 1.77 hours in high school students. with increasing age and educational level, the average hours of working with computer increased. 44% of students went to school on foot, 32.5% by public transport their parent cars and 23.5% by school services.

Mean weight of Students was  $46 \pm 11.8$  kg. Student's average height was  $151 \pm 9$  cm. The shortest student was 178 cm and 108 cm and their highest increase with age students, their height is greater.

Table 1: Frequency of Parents obesity.

variable	Mother		Father	
	Percent	Frequency	Percent	Frequency
Obese	1.0	2	12.0	24
Overweight	8.0	16	5.0	10
normal	71.0	142	63.0	126